ABSTRACT OF THE DISCLOSURE

In a wide-coverage network comprising electronic edge nodes interconnected by bufferless core nodes, where each edge node comprises a source node and a sink node, both sharing an edge-node controller and having means for data storage and managing data

5   buffers, the transfer of bursts from source nodes to sink nodes via the core nodes requires precise time coordination to prevent contention at the bufferless core nodes. A core node preferably comprises a plurality of optical switches each of which may switch entire channels or individual bursts.

Each source node has a time counter and each core node has at least one time counter.

10   All time counters have the same period and time-coordination can be realized through an exchange of time-counter readings between each source node and its adjacent core nodes. The time-counter readings are carried in-band, alongside payload data bursts destined to sink nodes, and each must be timed to arrive at a corresponding core node during a designated time interval. The difficulty of securing time-coordination arises from two interdependent

15   requirements:

communicating a time-counter reading from a controller of a source node to a controller of a core node requires that the source node be time-locked to the core node, and

time-locking a source node to a core node necessitates that a controller of the core node be able to receive a time-counter reading from the source-node controller during a

20   designated interval of time.

To initiate or restore time locking, a secondary mechanism is required for directing upstream signals received from source nodes toward said master controller. The present disclosure provides such mechanisms.

25